

Claims

1. An energy distribution network for providing hydrogen fuel to a user comprising
 - (a) energy resource means;
 - (b) hydrogen production means to receive said energy from said energy resource means;
 - (c) hydrogen fuel user means to receive hydrogen from said hydrogen production means; and
 - (d) data collection, storage, control and supply means linked to said energy resource means, said hydrogen production means and said hydrogen fuel user means to determine, control and supply hydrogen from said hydrogen production means.
2. A network as defined in claim 1 wherein said energy resource means comprises electricity supply means.
3. A network as defined in claim 2 wherein said hydrogen production means comprises one or more water electrolyzers.
4. A network as defined in claims 1 wherein said water electrolyser means comprises a plurality of water electrolyzers.
5. A network as defined in claim 4 wherein said hydrogen fuel user means is connected to at least one of each of said water electrolyzers.
- 20 6. A network as defined in claim 1 wherein said data control and supply means is linked to said water electrolyser means.
7. A network as defined in claim 1 wherein said data means is linked to said hydrogen fuel user means.
8. A network as defined in claim 1 wherein said data and information control is linked to the energy resource means.
- 25 9. A network as defined in claim 1 comprising data storage means.
10. A network as defined in claim 1 wherein said data means comprises means for providing information data selected from the group consisting of the amount, time and duration of delivery of said energy resource, and forecast to, and hydrogen production from, said hydrogen production means; hydrogen pressure of and rate of change thereof within said user storage means; and volume of user storage means.
- 30 11. A network as defined in claim 3 wherein said data means comprises means for providing information selected from the group consisting of

- (a) the amount of hydrogen required from said electrolyser by said user;
- (b) time of delivery of electrical energy to said electrolyser means;
- (c) duration of period said energy is to be delivered to said electrolyser means;
- (d) energy level to be sent to said electrolyser means;
- 5 (e) hydrogen pressure of said user storage means;
- (f) rate of change in hydrogen pressure within said user storage means;
- (g) volume of user storage means; and
- (h) "real time" price of electricity and price forecast.

12. A network as defined in claim 11 wherein said information comprises:

- 10 (i) rate of energy level or the type of modulation of said energy resource means to said electrolyser means; and
- (ii) types of electrical energy selected from fossil fuels, hydro, nuclear, solar and wind generated.

13. A network as defined in claim 1 comprising

- 15 (i) an electrolytic cell for providing source hydrogen;
- (ii) a compression means for providing outlet hydrogen at an outlet pressure;
- (iii) means for feeding said source hydrogen to said compressor means;
- (iv) means for feeding said outlet hydrogen to said user;
- (v) control means for activating said cell to provide said hydrogen source when said outlet pressure fall to a selected minimum value; and
- (vi) user activation means for operably activating said control means.

20 14. A network as defined in claim 13 wherein said electrolytic cell comprises said compression means whereby said outlet hydrogen comprises source hydrogen and said step (iii) is constituted by said cell.

25 15. A network as defined in claim 13 wherein said electrolytic cell comprises a hydrogen fuel appliance apparatus wherein said means (iv) comprises vehicle attachment means attachable to a vehicle to provide said outlet hydrogen as fuel to said vehicle.

16. A network as defined in claim 1 further comprising energy generation means linked to said user storage means to provide energy from said stored hydrogen to said user.

30 17. A network as defined in claim 16 wherein said energy generation means comprises electricity generating means to generate electricity.

18. A network as defined in claim 17 wherein said network comprises electrical

conduits of a local area, wide area or national area electricity distribution network.

19. A network as defined in claim 16 wherein said energy generation means comprises hydrogen combustion means for providing thermal energy.
- 5 20. A network as defined in claim 16 wherein said user is an internal combustion engine for a vehicle.
21. A network as defined in claim 16 wherein said user is an electricity generating fuel cell.
22. A network as defined in claim 1 wherein said hydrogen fuel user means comprises a plurality of geographic zones located within or associated with at least one building structure selected from the group consisting of an office, plant, factory, warehouse, shopping mall, apartment, and linked, semi-linked or detached residential dwelling wherein at least one of said geographic zones has zone data control and supply means linked to said data collection, storage, control and supply means as defined in claim 1(d) to said geographic zones.
- 10 15. A network as defined in claim 22 wherein each of at least two of said geographic zones has zone data control and supply means, and a building data control and supply means linked to (i) said data collection, storage, control and supply means, and (ii) each of at least two of said geographic zone data control and supply means in an interconnected network, to determine, control and supply hydrogen from said hydrogen production means to said geographic zones.
- 20 25. A network as defined in claim 22 wherein said geographic zones further comprise a hydrogen conversion or generation apparatus selected from the group consisting of a fuel cell, boiler, furnace, steam generator, turbine/motor generator, catalytic converter and a hydrogen generating electrolytic cell; and storage facility.